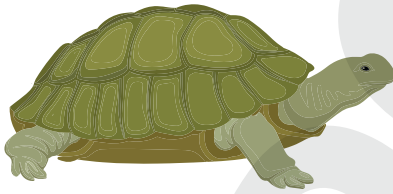
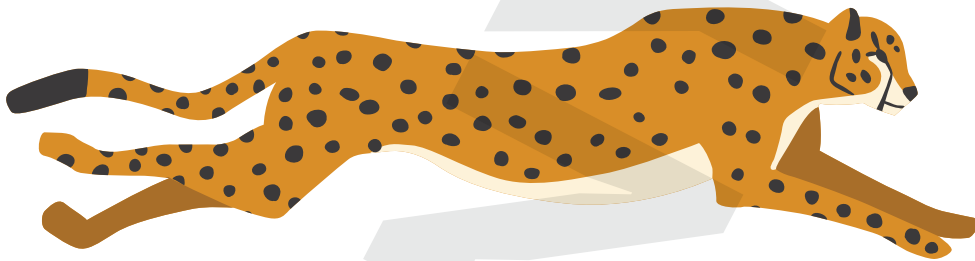


UNIT 2

Concept 3

Speed



Unit Lesson:

Lesson 6 Solar Vehicles



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موقع مذكرات جاهزة للطباعة



Lesson

6

سيارات تعمل بالطاقة الشمسية Solar Vehicles

» Some cars operate using **fuel** or **electricity** but they have some disadvantages.

« بعض السيارات تعمل بالوقود أو بالكهرباء ولكن لهذه السيارات بعض العيوب.

Disadvantages of Fuel-powered Cars

عيوب السيارات التي تعمل بالوقود



- They need gas stations.
- They cause climate changes.

استخدام الوقود ينتج عنه عوادم
تؤدي لتغير المناخ.



Disadvantage of Electric Cars

عيوب السيارات التي تعمل بالكهرباء



- They have batteries that must be charged.

تحتوي على بطاريات يجب
شحنها باستمرار.



» Mechanical engineers designed vehicles that operate by using **solar energy**.

« صمم المهندسون سيارات تعمل بالطاقة الشمسية.

Advantages of Solar Cars مميزات السيارة التي تعمل بالطاقة الشمسية

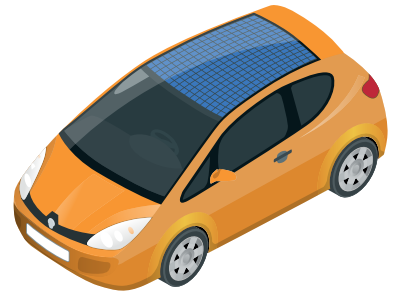
- 1 They don't need fuel. لا تحتاج إلى وقود. «
- 2 They don't need charging. لا تحتاج إلى شحن. «
- 3 They don't cause climate changes. لا تؤدي لتغير المناخ. «
- 4 They are light in weight. خفيفة الوزن. «



Disadvantage of Solar Cars عيب السيارة التي تعمل بالطاقة الشمسية

» The amount of energy a solar car gets from the sun is less than that we get from gasoline or electricity.

« مقدار الطاقة الشمسية التي نحصل عليها من الخلايا الشمسية أقل بكثير جداً من الطاقة التي نحصل عليها من خلال الوقود أو الكهرباء.





Quiz

Unit (2) Concept (3) Lesson (6)

1 Choose the correct answer:

- 1 cars cause pollution to the environment.

a. Solar	b. Electric
c. Fuel-powered	d. No correct answer
- 2 cars don't need fuel.

a. Solar	b. Electric
c. Fuel-powered	d. a & b
- 3 cars are light in weight.

a. Solar	b. Electric
c. Fuel-powered	d. No correct answer
- 4 Mechanical engineers designed a vehicle that operates by energy.

a. heat	b. sound
c. solar	d. kinetic
- 5 Electric cars

a. need fuel	b. need charging
c. cause pollution	d. no correct answer
- 6 Solar cars

a. cause climate changes
b. need charging
c. are light in weight
d. are heavy in weight



- 7 Which of the following statements is correct?
- a. The amount of energy we get from the sun is more than that we get from fuel.
 - b. The amount of energy we get from fuel is more than the energy we get from the sun.
 - c. The amount of energy we get from electricity is equal to the energy we get from the sun.
 - d. The amount of energy we get from fuel is equal the energy we get from the sun.

2 Put (✓) or (X):

- 1 Cars operate by using electricity only. ()
- 2 Fuel-powered cars always need gas stations. ()
- 3 Electric cars cause climate changes. ()
- 4 Solar cars are heavy in weight. ()
- 5 The amount of energy we get from the sun is more than the energy we get from fuel or electricity. ()

3 Fill in the gaps using the following words:

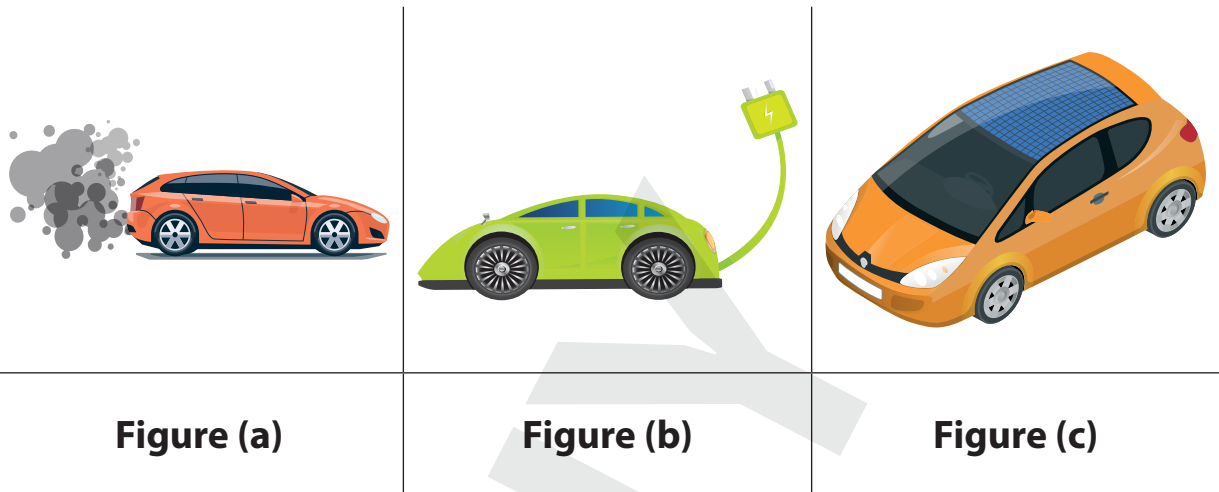
(Solar cars - electric cars – Fuel-powered cars
- more - light - heavy - less)

- 1 need gas stations, while need to be charged.
- 2 don't need fuel or electricity.
- 3 Solar cars are in weight.
- 4 The amount of energy we get from the sun is than the energy we get from fuel.





4 Study the figures, then answer the following questions:



- 1 Label the previous figures.
(a)
(b)
(c)
- 2 Which car(s) cause(s) climate changes?
.....
.....
- 3 Which car(s) does/do not cause climate changes?
.....
.....
- 4 Which car does not need fuel or charging?
.....
.....
- 5 What are the disadvantages of each car?
.....
.....



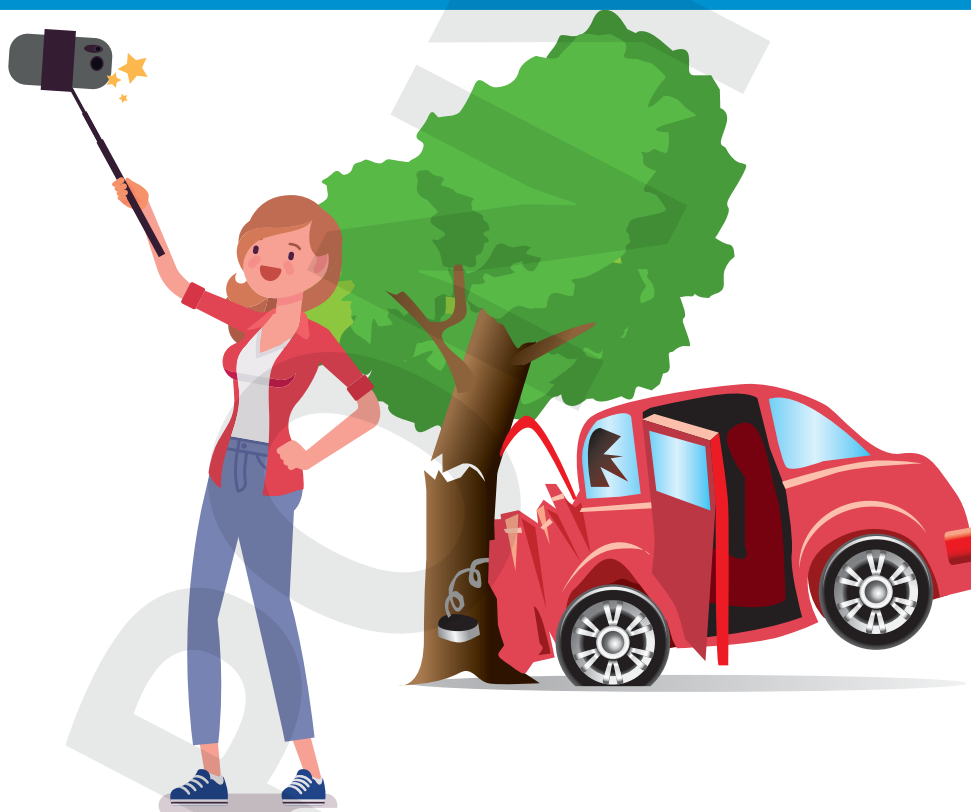
NOTES

ONLY
PROMPT

UNIT 2

Concept 4

Energy & Collision



Unit Lessons:

Lesson 1 Can you Explain?

Lesson 4 Mass in Collision

Lesson 2 Energy & Collision

Lesson 5 Energy Conservations During Collision

Lesson 3 Speed in Collision

Lesson 6 Collision Investigation Police

Lesson 1

Can you Explain?

When a fast truck hits a slow car عند اصطدام شاحنة سريعة بسيارة بطيئة

» Energy transfers from the truck to the car causing its damage.

« تنتقل طاقة الحركة من الشاحنة للسيارة مما يؤدي لحدوث أضرار بالسيارة.

Fast objects

الأجسام السريعة

cause more damage than
تسبب ضررًا أكبر من

slow objects

الأجسام البطيئة

Heavy objects

الأجسام الثقيلة



light objects

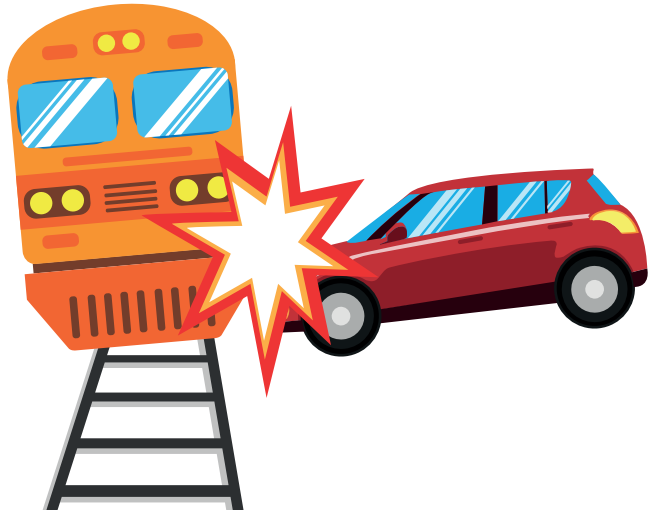
الأجسام الخفيفة

When a train collides with a car: عند تصادم القطار بالسيارة

» The train is a **heavy** object that has **more** energy than the car.

» The train causes **more damage** to the car.

« يسبب القطار ضررًا أكبر للسيارة
لأنه أثقل ولديه طاقة أكبر .





أمثلة على التصادم - Examples for Collision

1

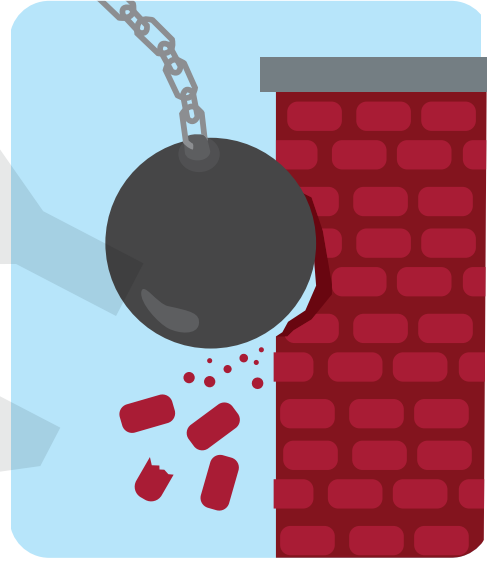
كرة الهدم Wrecking Ball

- It is a **heavy steel ball** swinging on a cable.

« كرة فولاذية ثقيلة معلقة بكابل.

- It is used by construction workers to **knock down** parts of buildings.

« تساعد عمال البناء علي تكسير أجزاء من المباني.



2

لعبة الكريكت Cricket Game

- The player uses a **bat** to hit the ball.

« يستخدم اللاعب مضرباً لضرب الكرة

- Energy transfers from the **bat** to the **ball**.

« تنتقل الطاقة من مضرب الكريكت للكرة

- When the bat hits the ball, the speed of the ball **increases** in the **opposite direction**.

« عند ضرب الكرة بالمضرب تزداد سرعة الكرة في الاتجاه المعاكس.



وسائل الأمان أثناء التصادم - Safety Equipment During Collision

1 حزام الأمان Car Seat-belt

- » It is used in cars to keep the driver's body from moving **forward** during collision.

« تستخدم لمنع جسم السائق من التحرك للأمام وقت التصادم.



2 الوسادة الهوائية Air Bag

- **Structure: التركيب**
 - It is made of **thin nylon material** folded into the steering wheel.

– تصنع الوسادة الهوائية من النايلون الخفيف وتطوى داخل عجلة القيادة.

- **Idea: فكرة عمله**

During collision:

- The air bag inflates automatically.

– تنتفخ الوسادة الهوائية تلقائياً بسرعة فائقة.

After collision:

- The air bag deflates fast, so the driver can get out of the car.

– تنكمش الوسادة الهوائية بسرعة فائقة حتى تسمح للشخص بالخروج من السيارة

- **Importance: الأهمية**

- It **slows** the speed of the driver when his body moves **forward**.

– يخفض سرعة حركة الجسم للأمام أثناء التصادم.

- It **absorbs** the energy of the car during collision.

– امتصاص طاقة تأثير التصادم.





Quiz

Unit (2) Concept (4) Lesson (1)

1 Choose the correct answer:

- 1 Fast cars cause damage slow cars.

a. more than	b. less than
c. equal to	d. no correct answer
- 2 Light objects cause damage heavy objects.

a. more than	b. less than
c. equal to	d. no correct answer
- 3 A train has kinetic energy the car.

a. more than	b. less than
c. equal to	d. no correct answer
- 4 Light objects always have energy.

a. low	b. high
c. moderate	d. no correct answer
- 5 is used to knock down parts of a building.

a. Winch	b. Crane
c. Truck	d. Wrecking ball
- 6 In cricket game, the speed of the ball when the player hits it.

a. increases in the same direction
b. decreases in the same direction
c. increases in the opposite direction
d. decreases in the opposite direction



- 7 In cricket game, when the player hits the ball,
 a. energy transfers from the ball to the bat
 b. energy transfers from the bat to the ball
 c. the speed of the ball increases in the same direction
 d. the speed of the ball decreases in the opposite direction
- 8 is (are) from the most important equipment during collision.
 a. Brakes
 b. Car seat-belt
 c. Air bag
 d. b & c
- 9 Car seat-belt is used to keep the driver from moving during collision.
 a. backward
 b. forward
 c. upward
 d. downward
- 10 collision, the air bag inflates automatically.
 a. During
 b. Before
 c. After
 d. No correct answer
- 11 collision, the air bag deflates fast.
 a. During
 b. Before
 c. After
 d. No correct answer

2 Put (✓) or (X):

- 1 Light objects cause damage less than heavy objects. ()
- 2 Fast objects cause damage less than slow objects. ()
- 3 A truck has more kinetic energy than a car. ()
- 4 In cricket games, the speed of the ball increases when the player hits it. ()
- 5 When the player hits the ball, energy transfers from the ball to the bat. ()





- 6 During collision, the air bag deflates automatically. ()
- 7 The car seat-belt is used to keep the driver from moving backward during collision. ()
- 8 The air bag absorbs the energy of the car during collision. ()

3 Fill in the gaps using the following words:

(forward - backward - same - opposite - more – less – plastic - nylon)

- 1 Light objects cause damage than heavy objects.
- 2 Fast objects cause damage than slow objects.
- 3 When the player hits the ball, it moves in the direction.
- 4 The car seat-belt keeps the body of the driver from moving during collision.
- 5 The air bag is made up of material folded inside the steering wheel.

4 Write the scientific term:

- 1 A heavy steel ball swinging on a cable. (.....)
- 2 A famous game in which the player hits the ball by the bat. (.....)
- 3 Safety equipment that keeps the body of the driver from moving forward during collision. (.....)
- 4 Safety equipment made of a thin nylon material folded into the steering wheel. (.....)



5 Study the figures, then answer the following questions:

1 From the following figure:

- Which object has the lowest energy and why?
- Which object causes more damage?



2 From the following figure, complete the following sentences.

- The boy uses a to hit the ball.
- Energy transfers from the to the
- When the boy hits the ball, the speed of the ball in the direction.



3 The following figure represents a, that is used in cars to keep the driver's body from moving during collision.



4 The following figure represents the air bag.

- The air bag automatically during collision.
- The air bag fast after collision so the driver can get out of the car.





Lesson

2

Energy & Collision

الطاقة والتصادم

التصادم Collision

It is the moment of crashing of two objects together.

هو لحظة اصطدام جسمين معاً.

عند تصادم سيارتين - When two cars collide

Energy transfer occurs.

يحدث انتقال للطاقة.



Changes of energy occurs.

يحدث تحولات للطاقة.



When a boy runs fast and hits a traffic sign:

» The boy stops moving **forward** and he may **bounce off** and **get injured**.

« يتوقف الولد عن الحركة للأمام وقد يرتد للخلف ويتعرض للإصابة.

» Kinetic energy transfers from the **boy** to the **traffic sign**. So, the traffic sign may vibrate (wobble).

« تنتقل طاقة الحركية من الولد لإشارة المرور فتتهتز إشارة المرور.

» A part of the **kinetic energy** changes to **sound** and **heat** during collision.

« يتحول جزء من الطاقة الحركية إلى طاقة صوتية و حرارية أثناء

التصادم.



The force exerted in accidents depends on

القوة المؤثرة في الحادثة تعتمد على:

1 اتجاه السيارتين Direction of the two cars

Two cars moving in the same direction

السيارتان تتحركان في نفس الاتجاه

- Damage will be **less** severe.
الأضرار أقل.



Two cars moving in opposite directions

السيارتان تتحركان في اتجاهين مختلفين

- Damage will be **more** severe.
الأضرار كبيرة.



2 سرعة السيارتين Speed of the two cars

Fast moving objects

الأجسام السريعة

- They have **more energy**.
تمتلك طاقة أكبر.
- When they hit another object, they exert **more force**.
عند التصادم تكون قوتها أكبر.
- This force causes **great damage** that cannot be repaired.
تسبب ضرراً أكبر لا يمكن إصلاحه.

Slow moving objects

الأجسام البطيئة

- They have **less energy**.
تمتلك طاقة أقل.
- When they hit another object, they exert **less force**.
عند التصادم تكون قوتها أصغر.
- This force causes **little damage** that can be repaired.
تسبب ضرراً أصغر يمكن إصلاحه.





When a fast object hits another object:

- » **Kinetic energy** transfers to the other object.
- » Some of the extra energy is transferred in the form of **heat**, **light** or **sound**.

عندما يصطدم جسم سريع بآخر:

« تنتقل طاقة الحركة للجسم الاخر وتتحوّل بعض الطاقة الزائدة إلى طاقة حرارية أو صوتية أو ضوئية.

A fast rubber ball makes **louder** sound when it is hit by a racket than a slow ball.
الكرة المطاطية السريعة تصدر صوتاً أعلى من الكرة البطيئة.



Driving fast is so **hazardous** (dangerous)
القيادة السريعة خطيرة جداً.



Unit (2) Concept (4) Lesson (2)

1

- 1



- 7 During collision, kinetic energy
- a. transfers from the slow object to the fast object
 - b. transfers from the fast object to the slow object
 - c. is destroyed and lost in the air
 - d. changes into potential energy
- 8 The effect of collision depends on the of the moving objects.
- a. speed
 - b. direction
 - c. a & b
 - d. no correct answer
- 9 The effect of collision increases by the speed of the moving object.
- a. increasing
 - b. decreasing
 - c. keeping
 - d. no correct answer

2 Put (✓) or (X):

- 1 Collision between moving objects produces kinetic energy only. ()
- 2 Collision between moving objects produces sound energy. ()
- 3 The effect of collision depends on the speed of the moving objects only. ()
- 4 The effect of collision increases if the two cars crashed in the same direction. ()
- 5 Hitting a fast rubber ball makes a sound louder than hitting a slow ball. ()
- 6 Kinetic energy is lost during collision. ()
- 7 Kinetic energy is doubled when the speed of the object is doubled. ()



3 Study the figures, then answer the following questions:

1 Which figure represents more severe damage and why?



Figure (1)



Figure (2)

2 When the car hits the tree,
a. kinetic energy transfers
 from the to the

b. A part of the kinetic energy
 changes to and
 energies.





Lesson

3

Speed in Collision

السرعة والتصادم

The Relationship between Speed and Kinetic Energy

العلاقة بين السرعة وطاقة الحركة

» As the object's speed **increases**, its kinetic energy **increases** (direct relationship).

كلما زادت كتلة الجسم زادت طاقة حركته (العلاقة طردية).

Fast objects

have

high kinetic energy

causes

more damage

Slow objects

have

low kinetic energy

causes

less damage

» If the clay ball **falls**.

إذا سقطت كرة
الصلصال.



» The shape of the ball changes **slightly**.

يتغير شكل الكرة قليلاً.

» If the clay ball is thrown **lightly**.

عند رمي كرة الصلصال
برفق.



» The shape of the ball changes **more**.

يتغير شكل الكرة بصورة أكبر.

» If the clay ball is thrown **strongly**.

عند رمي كرة الصلصال بقوة.

» The shape of the ball changes **much more**.

يتغير شكل الكرة بصورة أكبر جداً.



The Relationship between Mass and Kinetic Energy العلاقة بين الكتلة وطاقة الحركة

» As the object's mass **increases**, its kinetic energy **increases** (direct relationship).
كلما زادت كتلة الجسم زادت طاقة حركته (العلاقة طردية).

Heavy objects → have → high kinetic energy → causes → more damage

Light objects → have → low kinetic energy → causes → less damage

Effect of Mass on Collision – تأثير الكتلة على التصادم

If a **bike** moving with a speed 50 km/hr hits a person,

عندما تصطدم دراجة تتحرك بسرعة 50 كم في الساعة بشخص



the person may get injured only and he/she will survive.

قد يصاب الشخص فقط وينجو من الموت.

If a **car** moving with a speed 50 km/hr hits a person,

عندما تصطدم سيارة تتحرك بسرعة 50 كم في الساعة بشخص



the person's life may be in danger.

تتعرض حياة الشخص لخطر شديد.





1 Choose the correct answer:

- The kinetic energy of a train is that of a truck.
 - more than
 - less than
 - equal to
 - all the following
- When a car uses brakes to decrease its speed, its kinetic energy
 - increases
 - decreases
 - doesn't change
 - no correct answer
- The car with speed has the highest kinetic energy.
 - 100 km/h
 - 80 km/h
 - 60 km/h
 - 40 km/h
- When a hits a person, he may be injured only and survive.
 - train
 - truck
 - car
 - bike
- The shape of the clay ball changes slightly if the clay ball to the ground.
 - falls
 - is thrown
 - a & b
 - no correct answer

2 Put (✓) or (X):

- 1 The relationship between the speed of the object and the kinetic energy is a direct relationship. ()
- 2 The relationship between the mass of the object and the kinetic energy is an indirect relationship. ()
- 3 When a bike hits a boy, he will survive. ()
- 4 Fast and heavy objects always cause more damage. ()

Lesson 4

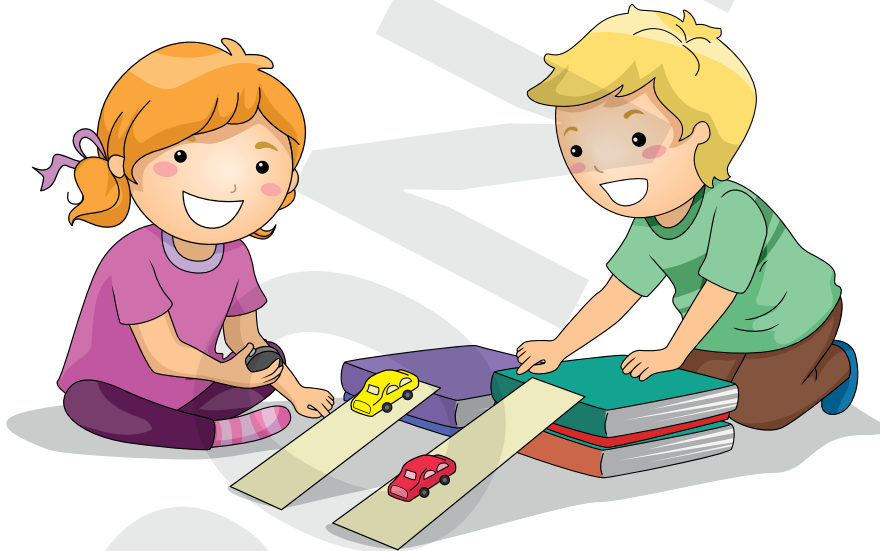
الكتلة في التصادم Mass in Collision

1

By increasing the height of a ramp,

» as the angle of the inclined ramp increases, the speed of the object **increases**.

تزداد سرعة الجسم بزيادة زاوية ميل السطح المائل (ارتفاع السطح المائل).

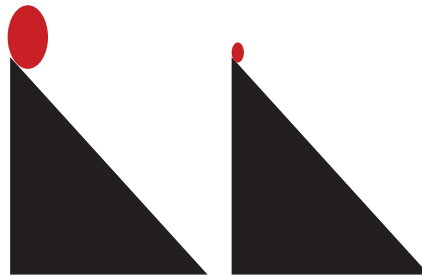


2

By increasing the mass of the object on the ramp,

» the big ball falls **faster than** the small ball.

الأجسام الكبيرة تسقط أسرع من الأجسام الصغيرة.



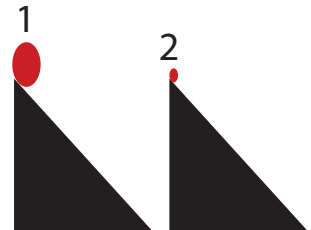


Quiz

Unit (2) Concept (4) Lesson (4)

1 Choose the correct answer:

- 1 As the angle of inclination of the ramp increases, the speed of the moving object
- a. increases b. decreases
c. remains constant d. no correct answer
- 2 The kinetic energy of an object sliding on a ramp depends on the
- a. angle of the ramp b. mass of the object
c. height of the ramp d. all the following
- 3 From the opposite figure, which statement is correct?
- a. Ball (1) reaches the ground first.
b. Ball (2) reaches the ground first.
c. Ball (1) and ball (2) reach the ground together.
d. No correct answer.
- 4 From the opposite figure, the red car reaches the ground first because
- a. the red car is heavier than the yellow car
b. the red car is lighter than the yellow car
c. the red car has a strong battery
d. the height of the ramp of the red car is more than that of the yellow car

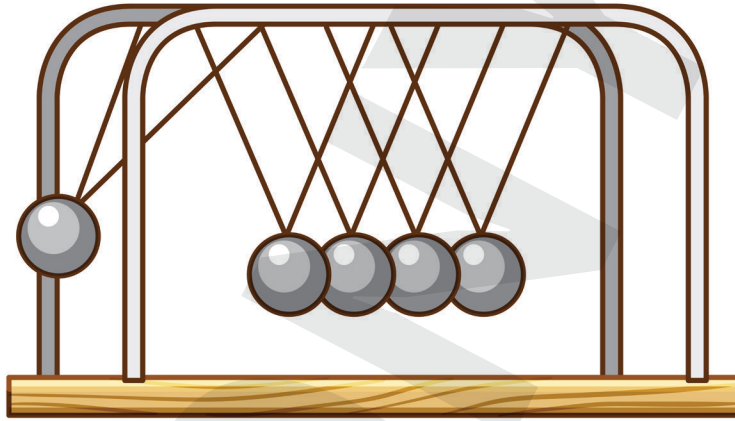


Lesson 5

تحويلات الطاقة أثناء التصادم

Energy Conversions During Collision

Energy transformation in Newton's pendulum (cradle)
تحويلات الطاقة في بندول نيوتن



- 1 **When the ball is raised up - عند رفع البندول لأعلي**
 - » The ball stores **potential energy** and doesn't contain any **kinetic energy**.
تخزن الكرة طاقة الوضع ولا تمتلك أي طاقة حركية.
- 2 **When you leave the ball - عند ترك الكرة لتتحرك**
 - » The potential energy **decreases** gradually and is converted into **kinetic energy**.
تقل طاقة الوضع تدريجياً وتتحول لطاقة حركية.
- 3 **When the ball hits the 1st ball next to it - عندما تصطم الكرة بأول الكرات**
 - » The kinetic energy is transferred to the next ball, then to the rest of the balls.
تنتقل الطاقة الحركية للكرة الأولى ومن ثم لبقية الكرات.

Some kinetic energy changes
to other forms, as **sound** & **heat** energies.





Quiz

Unit (2) Concept (4) Lesson (5)

1 Choose the correct answer:

- 1 is (are) form(s) of energy existing in Newton's cradle.
a. Kinetic energy **b.** Potential energy
c. Sound energy **d.** all the following
- 2 The ball stores potential energy when
a. the ball is raised up **b.** you leave the ball
c. the ball hits the 1st other ball
d. no correct answer
- 3 The potential energy is converted gradually to kinetic energy when
a. the ball is raised up **b.** you leave the ball
c. the ball hits the 1st other ball
d. no correct answer
- 4 When the ball of Newton's pendulum hits the 1st other ball,
a. kinetic energy transfers only to the 1st other ball
b. kinetic energy transfers to all the other balls
c. kinetic energy is destroyed and lost in the air
d. all kinetic energy is converted into sound energy
- 5 Some of the kinetic energy changes to in Newton's cradle.
a. chemical energy **b.** heat energy
c. sound energy **d.** b & c



Lesson 6

شرطة التحقيق فى التصادم
Collision Investigation Police

How does a crash investigator deal with collision?
كيف يتعامل محقق الشرطة مع حادث التصادم؟



- 1 A crash investigator sees a car crash as a **puzzle**.
« يتعامل محقق الشرطة مع حادث التصادم على أنه لغز. »
- 2 To solve the puzzle, he uses all scientific laws of **motion**, **force** & **energy**.
« يستخدم محقق الشرطة قوانين الحركة والقوة والطاقة لحل اللغز. »
- 3 He asks the two drivers to know who **caused** the accident.
« يسأل محقق الشرطة السائقين لمعرفة من المتسبب فى الحادث. »
- 4 He **examines** the two cars to get the needed information.
« يقوم المحقق بفحص السيارتين وجمع كل المعلومات. »





مهام محقق الشرطة - Crash Investigator Tasks

1 Take measurements from of the accident scene- أولاً: أخذ القياسات من مكان الحادث

- 1 He measures the **damage** of the two cars & their positions after collision.

« يقيس مدى الضرر في السيارتين وموضعهما بعد الحادث.

- 2 He uses **photos & videos** to collect all the needed information about the accident.

« قد يعتمد المحقق على الصور والفيديوهات لمعرفة تفاصيل الحادث.

- 3 The two cars are stored for close **inspection**.

« يتم الاحتفاظ بالسيارتين للتحقق من الضرر بشكل دقيق.



2 Collecting data - ثانيًا: جمع المعلومات

- 1 He knows the **acting force** on the car.

« يقوم بمعرفة القوة المؤثرة على السيارة.

- 2 He measures the car mass by using a **scale**.

« يقوم بقياس كتلة السيارة عن طريق الميزان.

- 3 He uses reference materials that the manufacture company supplies.

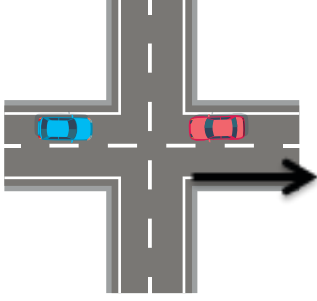
- 4 These materials help him know how much force is involved in the crash.

« يستخدم المحقق مواد مرجعية تأتي من الشركة المصنعة للسيارة ويقوم بمقارنتها لمعرفة مقدار القوة المؤثرة في التصادم.



Front Collision

تصادم أمامي



If the two cars collide when they are moving in opposite directions,

عندما تصطدم سيارتان في إتجاهين مختلفين

the **blue** car is moving in the wrong direction with a very high speed.

السيارة الزرقاء تسير في الاتجاه الخاطئ
بسرعة عالية جداً.

Side Collision

تصادم جانبي



When the **blue** car hits the **red** car at its side.

عندما تصدم السيارة الزرقاء
من جانب السيارة الحمراء

The arrow shows the direction of the red car after collision.

السهم يوضح اتجاه السيارة الحمراء بعد التصادم.





Quiz

Unit (2) Concept (4) Lesson (6)

1 Choose the correct answer:

- 1 A crash investigator sees a car crash as a
 - a. puzzle
 - b. joke
 - c. problem
 - d. no correct answer
- 2 The crash investigator task(s) is (are)
 - a. he uses laws of motion, force and energy to solve the puzzle
 - b. he asks the two drivers, who caused the accident
 - c. he measures the damage of the two cars
 - d. all the following answers are correct
- 3 A crash investigator uses to collect information about the accident.
 - a. photos
 - b. videos
 - c. a & b
 - d. no correct answer
- 4 A crash investigator measures the car by using a scale.
 - a. volume
 - b. mass
 - c. position
 - d. weight
- 5 When a driver stops suddenly, the passengers move
 - a. upward
 - b. downward
 - c. forward
 - d. backward



NOTES

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PONY



Vocabulary

المفردات Vocabulary

on Unit 2 - Concept 3 - Lesson 6

Fuel-powered cars	سيارات تعمل بالوقود	Pollution	تلوث
Electric cars	سيارات تعمل بالطاقة الكهربائية	Environment	البيئة
Solar cars	سيارات تعمل بالطاقة الشمسية	Vehicle = car	سيارة
Fuel	الوقود	Light in weight	خفيفة الوزن
Charging	شحن	Heavy in weight	ثقيلة الوزن
Climate changes	تغير المناخ		

المفردات Vocabulary

on Unit 2 - Concept 4 - Lesson 1

Collision	تصادم	Cricket game	لعبة الكريكيت
Heavy objects	الأجسام الثقيلة	Safety equipment	وسائل الأمان
Light objects	الأجسام الخفيفة	Air bag	الوسادة الهوائية
Truck	شاحنة	Folded	مطوية
Damage	دمار	Steering wheel	عجلة القيادة
Wrecking ball	كرة الهدم	Inflates	تنتفخ
Swinging	معلقة من أعلي	Deflates	تنكمش
Construction workers	عمال البناء	Automatically	تلقائياً
Bat	مضرب الكريكت	Absorb	تمتص
Collide = hit	يصدم أو يضرب		





المفردات Vocabulary

on Unit 2 - Concept 4 - Lesson 2

Collision = crash	تصادم	Severe	خطير
Traffic sign	إشارة المرور	Repair	يصلح
Transfer	تنتقل	Kinetic energy	طاقة الحركة
Speed	سرعة	Extra energy	طاقة زائدة
Direction	اتجاه	Loud sound	صوت أعلى
Get injured	يصاب	Rubber ball	كرة مطاطية
Swinging	معلقة من أعلي	Hazardous	خطر

المفردات Vocabulary

on Unit 2 - Concept 4 - Lesson 3

Clay	صلصال	Get injured	يصاب
Bike	دراجة	Slightly	قليلاً
Survive	ينجو	In danger	معرض للخطر

المفردات Vocabulary

on Unit 2 - Concept 4 - Lesson 4

Ramp	منحدر	Height	ارتفاع
Inclined	مائل	Angle	زاوية





Vocabulary

المفردات Vocabulary

on Unit 2 - Concept 4 - Lesson 5

Transformation	تحولات	Raised up	ترتفع لأعلى
Pendulum = cradle	البندول	Gradually	تدريجياً

المفردات Vocabulary

on Unit 2 - Concept 4 - Lesson 6

Investigator	محقق	Accident	حادثة
Puzzle	لغز	Close inspection	فحص دقيق
Laws	قوانين	Reference material	مواد مرجعية
Examine	يفحص	Manufacture	تصنيع
Information	معلومات	Comparison	مقارنة
Measurements	قياسات	Front collision	تصادم أمامي
Tasks	مهام	Side collision	تصادم جانبي





A Model Answers

Unit (2) Concept (3) Lesson (6)

1 Choose the correct answer:

- 1 c 2 d 3 a 4 c 5 b 6 c 7 b

2 Put (✓) or (X):

- 1 X 2 ✓ 3 X 4 X 5 X

3 Fill in the gaps using the following words:

- 1 Fuel-powered cars – electric cars
2 Solar cars 3 light 4 less

4 Study the figures, then answer the following questions:

- 1 a. Fuel-powered car b. Electric car c. Solar car
2 Fuel-powered car
3 Solar car
4 Solar car
5 Figure (a): It causes climate changes.

Figure (b): It has batteries that need to be charged.

Figure (c): The amount of energy produced from the sun is less than the amount of energy produced from fuel or electricity.





A Model Answers

Unit (2) Concept (4) Lesson (1)

1 Choose the correct answer:

- 1 a 2 b 3 a 4 a 5 d 6 c 7 b
8 d 9 b 10 a 11 c

2 Put (✓) or (X):

- 1 ✓ 2 X 3 ✓ 4 ✓
5 X 6 X 7 X 8 ✓

3 Fill in the gaps using the following words:

- 1 less 2 more 3 opposite
4 forward 5 nylon

4 Write the scientific term:

- 1 Wrecking ball 2 Cricket game
3 Car seat-belt 4 Air bag

5 Study the figures, then answer the following questions:

- 1 a. The car, because it is light in weight. b. The truck
2 a. bat b. bat – ball c. increases
d. opposite
3 car seat-belt – forward
4 a. inflates b. deflates





A Model Answers

Unit (2) Concept (4) Lesson (2)

1 Choose the correct answer:

- 1 d 2 d 3 a 4 b 5 a
6 a 7 b 8 c 9 a

2 Put (✓) or (X):

- 1 X 2 ✓ 3 X 4 X
5 ✓ 6 X 7 ✓

3 Study the figures, then answer the following questions:

- 1 Figure (1), because the two cars are in opposite directions.
2 a. car – tree b. sound – heat

A Model Answers

Unit (2) Concept (4) Lesson (3)

1 Choose the correct answer:

- 1 a 2 b 3 a 4 d 5 a

2 Put (✓) or (X):

- 1 ✓ 2 X 3 ✓ 4 ✓





Model Answers

A Model Answers

Unit (2) Concept (4) Lesson (4)

1 Choose the correct answer:

- ① a ② d ③ a ④ d

A Model Answers

Unit (2) Concept (4) Lesson (5)

1 Choose the correct answer:

- ① d ② a ③ b ④ b ⑤ d

A Model Answers

Unit (2) Concept (4) Lesson (6)

1 Choose the correct answer:

- ① a ② d ③ c ④ b ⑤ c



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